

(II.) i and $\frac{di}{dt}$ reduced to 1840·0.

	Lat.	Long. E. from Paris.	i .	$\frac{di}{dt}$
Paris	48° 50'	0° 0'	67° 11' 24	-3' 2700
Brussels	50 51	2 22	68 21' 16	-2' 8772
London	51 31	-2 25	69 13' 36	-2' 5572
Göttingen	51 31	7 34	67 46' 83	-2' 6434
Berlin	52 31	11 2	67 58' 12	-2' 5394
Copenhagen	55 41	10 15	69 55' 07	-1' 5495
Christiania	59 55	8 23	71 49' 36	-1' 8597
Stockholm	59 30	15 44	71 27' 96	-1' 6578
Petersburg	59 57	27 59	70 56' 17	-1' 1098
Kazan	55 48	47 1	68 21' 02	+0' 8169
Catharinenburg ..	56 50	58 14	69 47' 67	+0' 8739
Nertschinsk	51 18	117 1	67 6' 11	+4' 1819
Pekin	39 54	114 5	55 33' 11	+3' 8466
Sitka	57 3	222 25	75 46' 16	+1' 4892
New York	40 43	283 31	72 48' 27	-1' 1307

These variations are in good harmony with the general motion of the magnetical system from west to east in the northern hemisphere. C. H.

3. A letter was also read from Dr. Rigby addressed to the Secretary, communicating a circular from the Committee of the Seckenberg Society of Natural History at Frankfort, respecting the celebration of the 50th Anniversary of Prof. Tiedemann's doctorate.

February 2, 1854.

COLONEL SABINE, R.A., Treas. & V.P., in the Chair.

The following papers were read:—

1. "Sur la Théorie de l'orientation du Plan oscillatoire du Pendule simple, et son application à la recherche de l'aplatissement du sphéroïde terrestre." By M. Oliveira. Communicated by Charles Babbage, Esq., F.R.S. &c. Received January 18, 1854.

In this memoir the author first deduces a formula upon *geometrical* considerations *alone*, expressing the deviation of a free pendulum (like Foucault's) in terms of the latitude and difference of meridians, or hour-angle; and this is done (as far as appears) without any reference to the *dynamical* considerations on which Foucault's formula is deduced, assuming only the inertia of the pendulum.

The author's formula assumes the earth to be a *sphere*. If now, observation should give a slightly different deviation, the author infers that this would be due to the *ellipticity* of the earth; and in-

vestigates a formula geometrically, to express the ellipticity in terms of such difference; and thus by accurate observations of Foucault's pendulum in different parts of the earth, he conceives the ellipticity might be determined.

As an instance, he cites Foucault's result for the latitude of Paris; which differs by a small amount from the formula, and which he considers accordingly to express the ellipticity, though he does not calculate it.

2. "On the Extension of the value of the Base of Napier's Logarithms; of the Napierian Logarithms of 2, 3, 5, and 10; and of the Modulus of Briggs's, or the Common System of Logarithms; all to 205 places of decimals." By William Shanks, Esq. Communicated by G. B. Airy, Esq., Astronomer Royal, F.R.S. &c. Received January 21, 1854.

The author, after referring to the value of π to 527 decimals computed by him and printed in the 'Proceedings,' for January 20, 1853, states that he has very recently extended and computed the values which form the subject of this communication to 205 places of decimals; and as very great care has been taken to exclude error, it is presumed there exist reasonable grounds for pronouncing them quite accurate. At the same time it should be distinctly understood, that *no direct check or proof* has yet been applied to the values in question. He states that the formulæ employed in finding these logarithms, are investigated by Mr. J. R. Young, in his 'Elementary Essay on the Computation of Logarithms,' pp. 13 and 14, and he considers that no better formulæ than these have yet been published for readily computing, *to a great extent*, the Napierian logarithms of 2, 3, 5, 7, &c.

Subjoined are the values referred to:—

Base of Napier's Logarithms =

27182818	2845904	5235360	2874713	5266249
7757247	0936999	5957496	6967627	7240766
3035354	7594571	3821785	2516642	7427466
3919320	0305992	1817413	5966290	4357290
0334295	2605956	3073813	2328627	9434907
6323382	9880748	2070767	3049394	92+&c.

Napierian Logarithm of 2 =

6931471	8055994	5309417	2321214	5817656
8075500	1343602	5525412	0679523	5847083
2754439	2266635	5206804	5602137	0371911
8226310	4298719	4582110	0448886	1731607
5101002	4259177	6434321	7424545	3493150
3980048	7339123	6947695	8281006	80+&c.

Napierian Logarithm of 3 =

10986122	8866810	9691395	2452369	2252570
4647490	5578227	4945173	4693570	0667031
1626456	2261348	7915959	6453630	4663543
4230252	7148232	3776931	0688498	5615669
0906550	5814573	8582278	9682167	2037498
0000626	1111154	1362298	9315024	24+&c.